

Scientific Note

A RARE FIND: THE CAPTURE OF A PRIMARY QUEEN OF THE WESTERN SUBTERRANEAN TERMITE

Field discoveries of true, macropterous-derived, physogastric, primary queens of subterranean termites rarely occur (Snyder, T. E. 1935. Our enemy the termite. Comstock Publishing Co., Ithaca, New York; Potter, M. F. 1997. Termites. Chapter 6. pp. 233–333. *In* Mallis, A. 1997. Handbook of pest control. 8th.ed. GIE Publishers Inc. Ohio; Thorne, B. L. 1998. Part 1. pp. 1–30. Biology of subterranean termites of the genus *Reticulitermes*. NPCA research report on subterranean termites. NPCA, Dunn Loring, Virginia).

This is not at all surprising in that subterranean termites, particularly those of the genus *Reticulitermes*, are cryptobiotic in nature. The critical life processes of most subterranean termite colonies take place in the soil and/or in logs, stumps, poles, posts, tree roots, etc. which are in the ground. Also, *Reticulitermes* nests are not clearly defined, and the reproductive forms are known to migrate from soil to wood and vice versa as well as within wood in response to changes in temperature and moisture (Snyder 1935). All of these factors combine to make the capture of true primary queens in the field rare events.

The first record of queens being found in a Nearctic subterranean termite colony was reported in 1893 (Joutel, L. H. 1893. J. N. Y. Ent. Soc., 1: 89–90). The fact that 23 queens were reported from one colony of *Reticulitermes flavipes* (Kollar) confirms that these were secondary reproductives and not primary queens. The first record of a true queen of *Reticulitermes* having been taken occurred in 1901. The specimen in question was actually captured in June 1898. A notation in this article stated that: “This is the first true Termite queen which has been found in North America” (Anonymous 1901. Proc. Ent. Soc. Wash., 4: 347). The capture of a true queen of *R. flavipes* was recorded in 1902 (Schaeffer, C. 1902. J. N. Y. Ent. Soc., 10: 251). A second record of the taking of a primary queen of *R. flavipes* occurred in 1912 (Schaeffer, C. 1912. Bull. Brooklyn Ent. Soc., 8: 30). Another report of the discovery of a true queen of *R. flavipes* was documented in 1912 (Snyder, T. E. 1912. Proc. Ent. Soc. Wash., 14: 107–108). Apparently, unaware of Schaeffer’s (1902) find, the preceding article stated that: “It is believed that is the first fertilized true queen ever found of this species.”

This paper reports the capture of a primary queen of the western subterranean termite, *Reticulitermes hesperus* Banks in Hemet, Riverside County, California on 4 April 1995. Information is presented on the circumstances surrounding her capture and the condition of this queen.

A few days before the discovery of this queen, the Terminix Riverside, California office received a phone call from one of its customers reporting termites swarming within one of their buildings. A Terminix representative was dispatched to conduct an inspection and investigate the situation. Upon arrival at the property, he was ushered into a concrete slab building which housed a shuffle board court/auditorium and was told that termites had swarmed by the bleachers a few days ago. Underneath one set of bleachers, a piece of partially delaminated, water-



Figure 1. A primary queen of the western subterranean termite, *Reticulitermes hesperus* Banks.

damaged plywood measuring approximately 70 cm × 70 cm × 1.4 cm covering a recessed area in the ground was discovered. The sides of this sunken area in the soil were fortified with form boards. On removing the plywood cover and turning it over, extensive subterranean termite shelter tubes were found on the form boards and on the bottom of the plywood cover. When the shelter tubes on the underside of the cover were opened, a primary queen of *R. hesperus* was found within the workings on the surface of the plywood (Fig. 1). Alates and soldiers were also retrieved from this colony. They were keyed to species using keys found in Weesner, F. M. 1965. *The termites of the United States—a handbook*. National Pest Control Association, Dunn Loring, VA. It is important to note that this imaginal queen was found in shelter tubes on wood essentially above soil level. This queen may have been induced to move up to this area because of the swarming which took place about two days before she was discovered. It is known that swarming in *Reticulitermes* colonies is a frantic event which generates enormous excitement, great activity, and much frenzy among members of a colony (Snyder 1935).

Observations on this queen in situ confirm what has been previously reported in the literature in that these first form physogastric queens are very ambulatory and are quite capable of traveling about on their own within a colony (Snyder, T. E. 1920. Proc. Ent. Soc. Wash., 22: 109–150; Snyder 1935).

This primary queen of *R. hesperus* measured 12 mm long and 4 mm wide at the greatest dorsal width of its abdomen. *Reticulitermes* queens have been reported to reach the largest dimension of 14.5 mm in length and 4 mm wide (Snyder 1920; Snyder, T. E. 1934. Chapter 16. pp. 187–195. In Kofoid, C. A. (ed.) 1934. Termites and termite control. Univ. Calif. Press, Berkeley). This first form queen may not have achieved its maximum size in that it was an immaculate specimen. Old queens of *Reticulitermes* have been described as having lost portions of their antennae, legs, and margins of their thoraxes probably due to activities such as constant social grooming (Snyder 1935).

The fact royal imaginal queens are rarely found in field colonies of *Reticulitermes* should not be interpreted to mean that these colonies are rarely headed by true primary queens. The rarity of macropterous queens is an anthromorphic phenomenon which is directly related to the inability to find these primary reproductives in a cryptobiotic social insect.

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